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NSA MID SOUTH
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STATEMENT OF BASIS SOLID WASTE MANAGEMENT UNIT 17 FORMER UNDERGROUND STORAGE TANK S 9 MILLINGTON SUPPACT TN
12/1/2005
STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

STATEMENT OF BASIS

SWMU 17 — Former Underground Storage Tank S-9
Naval Support Activity Mid-South
Millington, Tennessee

Purpose of the Statement of Basis

This Statement of Basis (SB) has been prepared to inform the public and provide an opportunity to comment on a proposed remedy at solid waste management unit (SWMU) 17 — Hazardous Waste Accumulation Point, at Naval Support Activity (NSA) Mid-South, Millington, Tennessee. NSA Mid-South is responsible for corrective action at SWMU 17, as required by a Resource Conservation and Recovery Act (RCRA) permit. The Tennessee Department of Environment and Conservation (TDEC) has determined that the proposed remedy of an institutional control that restricts groundwater use is protective of human health and the environment.

Before the remedy is finalized, TDEC would like to give the public an opportunity to comment on the proposed remedy. At any time during the comment period, the public may comment as described in the following section "How Can You Participate?" Upon closure of the public comment period TDEC will evaluate all comments and determine if there is a need to modify the proposed remedy.

Site Description

SWMU 17 (Figure 1) is approximately 100 feet north of Ticonderoga Street, on NSA Mid-South's Southside, and slopes slightly downward to the south and west. The SWMU 17 site consists of (1) an asphalt-covered lot that was used to store landscaping equipment, (2) Building S-9, formerly used as office space by a landscaping contractor, and (3) former underground waste/storage tank (UST) S-9. Installed in 1979 and removed in 1996, UST S-9 is reported to have received waste automotive oil and hydraulic fluid generated during automobile maintenance at Building S-9.

How Can You Participate?

TDEC solicits public review and comment on this SB prior to implementation of the proposed remedy as the final one. The final remedy for SWMU 17 will be incorporated into the Hazardous and Solid Waste Amendments Permit TNHW-094 for NSA Mid-South, scheduled to be updated in 2006.

Figure 1 SWMU 17 at NSA Mid-South in Millington, Tennessee

Public comment on this SB and the proposed remedy will begin on the date that a notice of the SB's availability is published in *The Millington Star* and *The Commercial Appeal*, local daily newspapers. Since community input could affect selection of a final remedy for SWMU 17, a public comment period has been established for 45 days from ***(insert date)***. If requested during the comment period, TDEC will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or to provide comments, contact the following person in writing within the 45-day comment period:

Mr. Roger Donovan
TDEC — Division of Solid Waste Management
5th Floor, L&C Annex
401 Church Street
Nashville, TN 37243-1538
Telephone: (615) 532-0864
E-mail: roger.donovan@state.tn.us

Investigative reports and documents related to SWMU 17 are referenced at the end of this SB and are included in the Administrative Record, which can be reviewed in the Information Repository that was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

Millington Civic Center
8077 Wilkinsville Road
Millington, Tennessee 38053
(901) 873-5770

Background Summary

Past operations at the former Naval Air Station (NAS) Memphis included metal plating, manufacturing, and other operations that involved the use of toxic and hazardous materials. Land use changed as a result of the 1990 Base Closure and Realignment (BRAC) Act, and the name of the facility was changed from NAS Memphis to NSA Mid-South.

A significant portion of NSA Mid-South's Northside was transferred to the City of Millington, and the remaining property was realigned (i.e., an operation was reassigned from NSA Mid-South to another facility, and/or an operation from another facility was reassigned to NSA Mid-South). Three facility operations changed: (1) Navy airfield operations ceased in October 1995, (2) training operations were realigned to NAS Pensacola in 1996, and (3) administrative operations for the Navy Bureau of Personnel were realigned from Washington, D.C., to NSA Mid-South in 1997. SWMU 17 is part of the remaining NSA Mid-South property.

The former UST at Building S-9 reportedly stored automotive oil and waste hydraulic fluid generated during automobile maintenance at Building S-9. The site was initially investigated in 1990 as part of the *RCRA Facility Assessment* (RFA; ERC/EDGe, 1990). Due to the former operations at the site, the UST at Building S-9 was designated as SWMU 17, warranting further evaluation to determine its potential risk to human health and the environment. As required by the Navy's RCRA Permit, NSA Mid-South is required to evaluate and assess all SWMUs for potential environmental impacts.

In addition to the 1990 RFA, previous investigations at SWMU 17 include a *Voluntary Corrective Action* (VCA), conducted by Koester Environmental Services, Inc. in 1996, to remove the UST and associated soil (Koester, 1996). Soil and groundwater data from the removal action indicated that a prior release from the UST had occurred. Therefore, to determine the nature and extent of contaminants related to the UST and its piping, a *Confirmatory Sampling Investigation* (CSI) was conducted in 1998. The results of the SWMU 17 CSI are provided in the *Assembly F RCRA Facility Investigation Report* (RFI; EnSafe, 2000). From the findings of the CSI, a recommendation was made for additional soil removal; as such, a second VCA was conducted in June 2000 to remove the residual petroleum-contaminated soil (EnSafe, 2001).

Analytical data from these investigations, and the associated removal activities, resulted in the remedy of a land-use control for SWMU 17 that prohibits the use of the site's groundwater.

The basis for this remedy selection is provided under the "Summary of Contaminant Evaluation" and "Summary of Site Risk" sections of this SB.

Summary of Contaminant Evaluation

Soil and groundwater samples were collected during the CSI to determine the nature and extent of petroleum- and/or solvent-related contaminants related to UST S-9. Sample locations are shown on Figure 2 (Attachment 1).

Contaminants detected in both soil and groundwater media are discussed below and are compared to the respective regulatory standards.

Soil

Of the 27 soil locations (subsurface and surface) sampled at SWMU 17, five exceeded TDEC's most stringent soil cleanup level (100 parts per million [ppm]) for total petroleum hydrocarbons (TPH). Concentrations of these samples ranged between 120 ppm to 320 ppm and were concluded to be the result of a release from UST S-9. TPH was also detected along the entire length of the pipe trench associated with UST S-9, indicating leaks associated with pipe joints. Figure 3 (Attachment 1) shows the locations and depth intervals at which TPH exceeded the most stringent cleanup level of 100 ppm.

Groundwater

Groundwater samples were collected from the sand and gravel (i.e., fluvial and alluvial) deposits that comprise the surficial aquifer at NSA Mid-South. The fluvial and alluvial sand and gravel deposits were the source of potable water before municipal water was introduced to the area.

Groundwater was collected from five fluvial sample locations at SWMU 17 and analyzed for volatile organic compounds and TPH. As shown in Figure 4 (Attachment 1), two of the five locations contained groundwater with contaminants that exceeded a regulatory screening criterion or action level. The following contaminants and concentrations were detected: (1) at 28 parts per billion (ppb), 1,2-dichloropropane exceeded its Maximum Contaminant Level (MCL) of 5 ppb and its tap water risk-based concentration (RBC) of 0.16 ppb, and (2) at 1.1 ppb, benzene exceeded its tap water RBC of 0.36 ppb. TPH was not identified in groundwater at SWMU 17, indicating the petroleum contaminants detected in soil were not leaching into groundwater.

Summary of Site Risk

Risks to human health and the environment from the contaminants identified at SWMU 17 were evaluated using human health and ecological risk assessments, developed in accordance with existing U.S. Environmental Protection Agency (USEPA) and TDEC methods, as part of the RFI. Since the nature and extent of the contaminant release had been sufficiently characterized during the CSI, additional soil and groundwater samples were not collected during the RFI. Analytical data from the CSI were used to conduct a human health risk assessment for the contaminants identified at SWMU 17.

Human Health Risk

Risk assessments use estimated intake as part of the calculations. Intake is affected by the land-use scenarios, where one scenario may account for lifetime exposure to groundwater and soil, and another scenario may only include occasional exposure to soil with no groundwater exposure. Human health risk at SWMU 17 was assessed using five land-use scenarios: site worker, child trespasser,

future site resident, construction worker, and maintenance worker.

- ***Soil***
  Since no chemicals of concern were identified in soil during the CSI/RFI, it was concluded that soil poses no risk under the five land-use scenarios.

- ***Groundwater***
  Benzene and 1,2-dichloropropane were identified as chemicals of concern, resulting in an excessive risk to a residential user, but not a site or maintenance worker land-use scenario. Currently, the fluvial deposits groundwater is not used as a potable water source, nor is it likely to be used as such, due to local county ordnances that restrict its use (EnSafe, 2000).

- ***Indoor Air Quality***
  To gauge whether the benzene and 1,2-dichloropropane pose a potential indoor air quality risk, concentrations were compared to UESPA's target groundwater concentration, at which soil gas could pose a concern to future occupants of the site (USEPA, 2005). Concentrations were below the target thresholds, indicating vapor intrusion would not be expected to pose a risk based on the available data.

Ecological Risk

Evaluating potential exposure pathways is one of the primary tasks of a screening-level ecological risk assessment. For an exposure pathway to be complete, a contaminant must be able to travel from the source to ecological receptors and to be taken up by the receptors via at least one exposure route. No complete exposure pathways exist at SWMU 17 due to lack of available habitat and receptors; the site is covered with asphalt and gravel. Therefore, no ecological risk assessment was recommended for SWMU 17.

Removal Actions

During the 1996 VCA removal of UST S-9, soil samples were collected from both the tank pit and from an associated pipe trench leading from the tank to Building S-9. Samples were analyzed for TPH and the results were compared to the TDEC-established most stringent cleanup level of 100 ppm and the site-specific standard of 1,000 ppm. Meeting the most stringent TPH cleanup level for soil shallower than 5 feet has been a Navy objective; the 1,000 ppm site-specific standard has been applied to soil deeper than 5 feet.

In June 2000, a second VCA was implemented, resulting in the removal of 200 cubic yards of petroleum-contaminated soil from the former UST cavity and former piping trenches. Confirmation samples were analyzed for metals and TPH, all of which were below respective cleanup levels and RBCs (EnSafe, 2001). The USEPA and TDEC concurred with the No Further Action recommendation in the VCA report.

Selected Remedy for SWMU 17

Groundwater data indicate an isolated area of the site contains contaminants that exceed the respective MCLs, which would pose an excessive risk to future site residents who consume groundwater. Municipal water serves the area and local ordnances prohibit use of the impacted aquifer, thereby protecting any future occupants of the site. However, to ensure protections remain in place, the selected remedy for the site is an institutional control that restricts use of the site's groundwater. Exclusive of groundwater, the site is eligible for unrestricted reuse, both residential and commercial.

A land-use control implementation plan (LUCIP) will be developed to establish the remedy requirements and will be incorporated into the NSA Mid-South's Regional Shore Infrastructure Plan (RSIP). As a minimum, the LUCIP will include the following:

- Location of land subject to LUC
- Explanation of LUC (e.g., signage and fencing requirements, restrictions, etc.)
- Duration of the LUC
- Requirements and frequency of LUC inspections, including documentation requirements.

Since TDEC's goals for human health and ecological risks have been met, no alternative remedies were evaluated. The Navy's proposed remedy is considered protective of human health and the environment. The remedy meets the four general standards of corrective measures, which are:

- Overall protection of human health and the environment
- Attainment of media cleanup standards
- Controlling the sources of release and
- Compliance with standards for management.

References

EnSafe Inc. (2000, April 28). *Confirmatory Sampling Investigation* — Revision 2. Memphis, Tennessee.

EnSafe Inc. (2000, September). *RCRA Facility Investigation Report, Assembly F SWMUs — 17, 19, 20, 22, 39, and 63, Revision 1. NSA Mid-South, Millington, Tennessee.* Memphis, Tennessee.

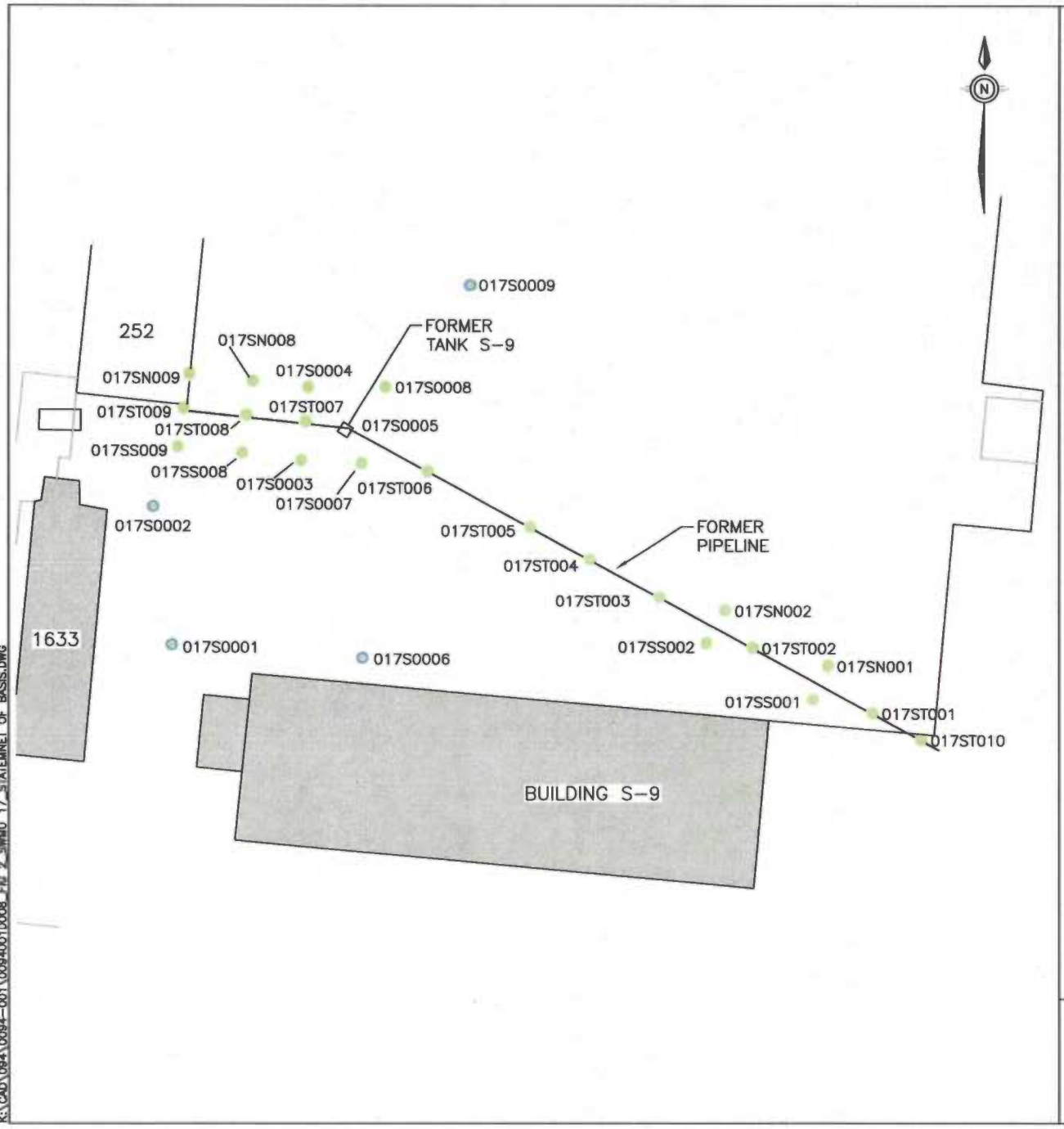
EnSafe Inc. (2001, January 3). *Voluntary Corrective Action Report — SWMU 17; NSA Mid-South. Revision 0;* Memphis, Tennessee.

ERC/EDGe. (September 1990). *RCRA Facility Assessment (RFA), NAS Memphis.* ERC/EDGe: Nashville, Tennessee.

Koester Environmental Services, Inc. (1996, November). *Underground Storage Tank Closure Report for UST S-9.* Evansville, Indiana.

U.S. Environmental Protection Agency. (2005). *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance).* November, 2002 and updates. Retrieved September 2005 from http://www.epa.gov/epaoswer/hazwaste/ca/eis/vapor.htm. EPA530-D-02-004.

Attachment 1



LEGEND

- SOIL SAMPLE LOCATION
- GROUNDWATER AND SOIL SAMPLE LOCATION
- NSA MID-SOUTH BOUNDARY
- AREA OF INVESTIGATION
- BUILDING

60 0 60

FEET

FIGURE 2
SWMU 17 STATEMENT OF BASIS
SOIL & GROUNDWATER SAMPLE LOCATIONS

K:\CAD\094\0094-001\79_NSA_REQUEST_SID
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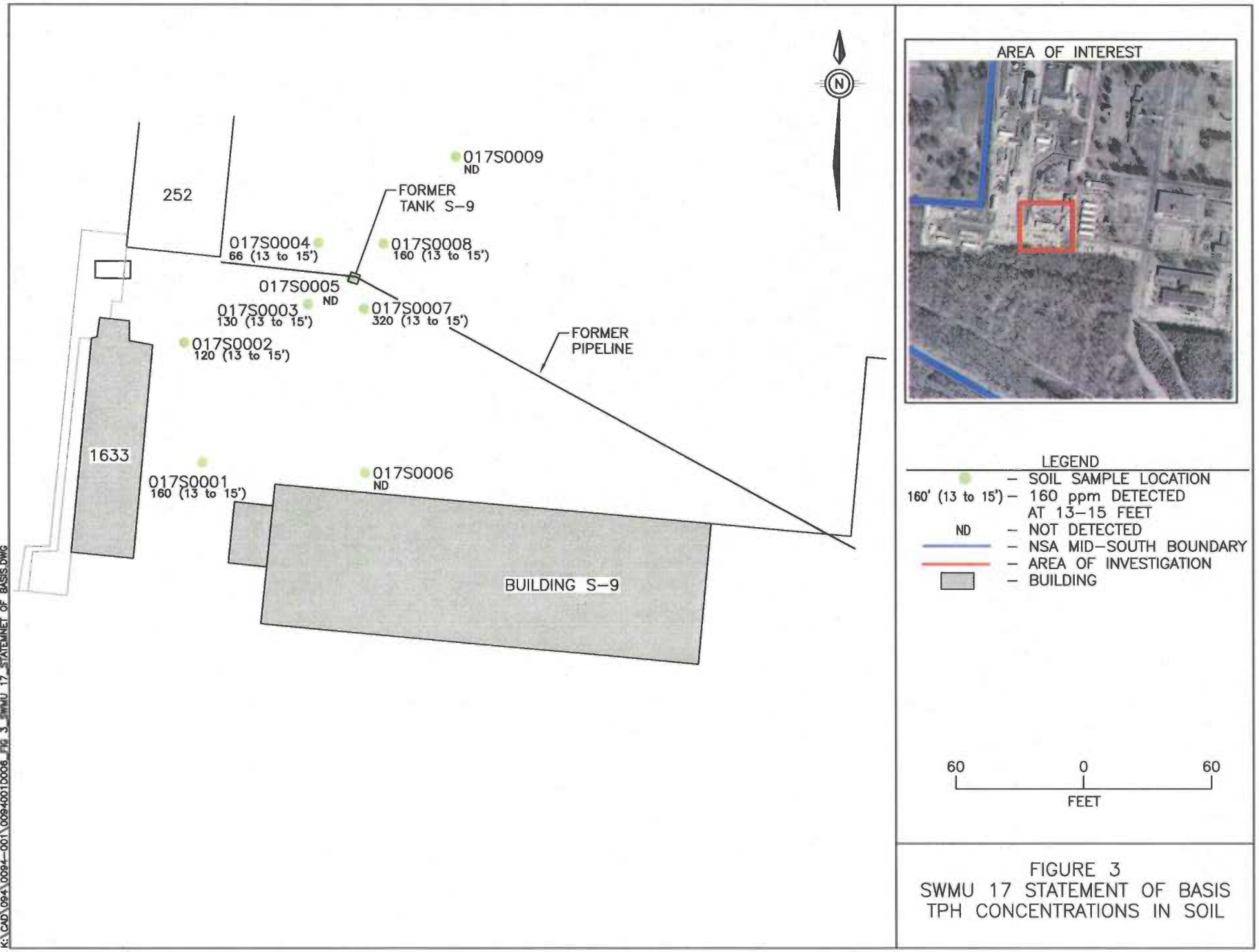
252
017S0009
ND
FORMER
TANK S-9
017S0004
66 (13 to 15')
017S0008
160 (13 to 15')
017S0005
ND
017S0003
130 (13 to 15')
017S0007
320 (13 to 15')
017S0002
120 (13 to 15')
FORMER
PIPELINE
1633
017S0001
160 (13 to 15')
017S0006
ND
BUILDING S-9
N
AREA OF INTEREST
LEGEND
– SOIL SAMPLE LOCATION
160' (13 to 15') – 160 ppm DETECTED AT 13-15 FEET
ND – NOT DETECTED
– NSA MID-SOUTH BOUNDARY
– AREA OF INVESTIGATION
– BUILDING
60
0
60
FEET
FIGURE 3
SWMU 17 STATEMENT OF BASIS
TPH CONCENTRATIONS IN SOIL
K:\CAD\094\0094-001\79_NSA_REQUEST_SID
K:\CAD\094\0094-001\00940010006_FIG 3_SWMU 17_STATEMNET OF BASIS.DWG

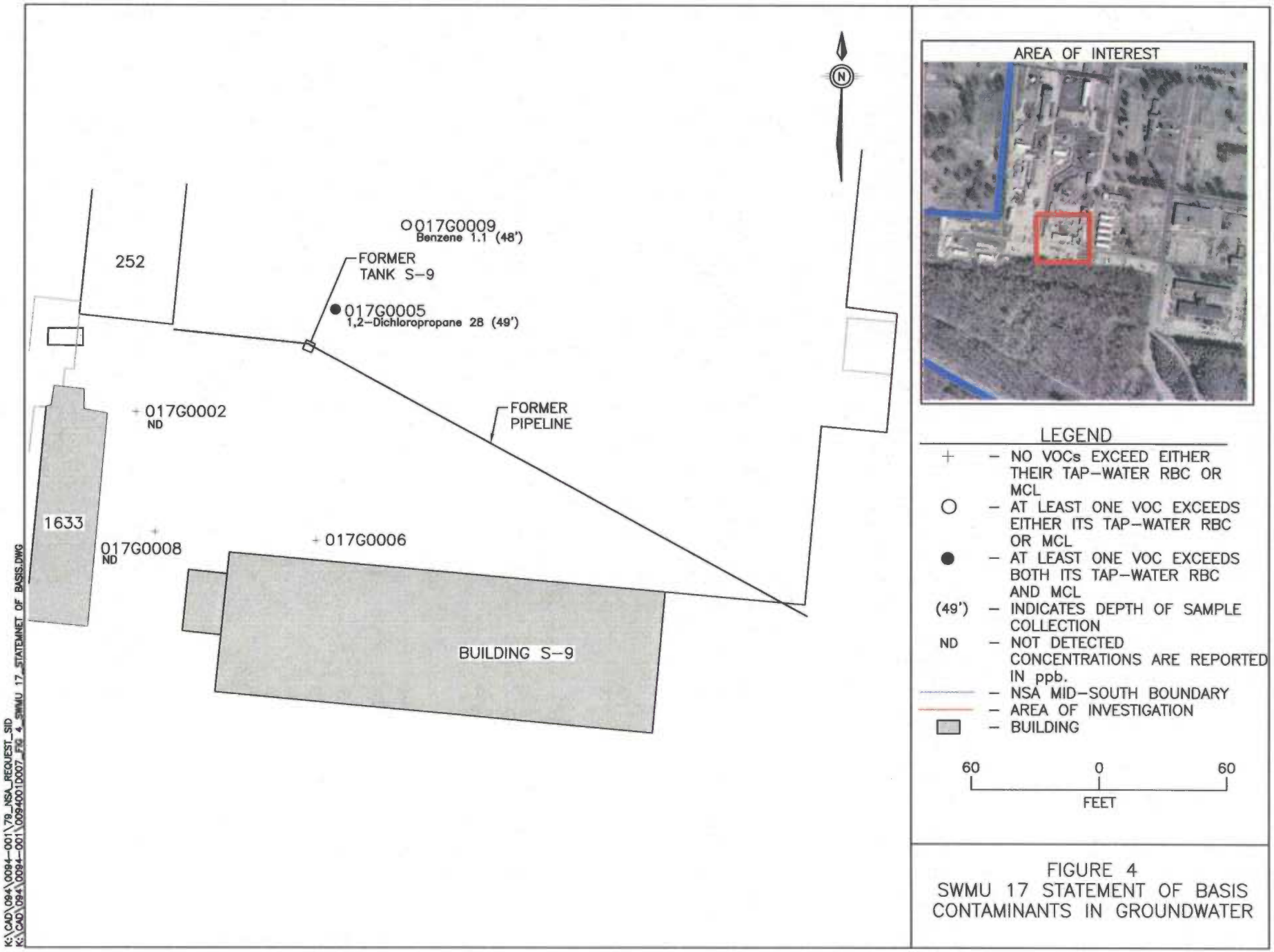

FIGURE 4
SWMU 17 STATEMENT OF BASIS
CONTAMINANTS IN GROUNDWATER